

MERITOCRATIC ANALYSIS OF
BURTON CLARK'S COOLING-OUT PROCESS

BY

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Abstract of Dissertation Presented to the Graduate School
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MERITOCRATIC ANALYSIS OF
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This study measured the cooling-out process, a mechanism by which community colleges convince academically weak transfer students to move from the transfer program into a terminal program, against a meritocratic definition of fairness to determine if this process denied access to the transfer degree to students from particular segments of society. The cooling-out process was fair according to meritocratic principles if factors extraneous to academic ability were not significantly related to which students were cooled out. While controlling for academic ability and age, this study assessed if socio-economic status, race, and gender taken independently and in combination were significant in predicting which students were cooled out.

This study drew its sample from students at a Florida community college who had earned either an Associate of

Science degree or an Associate of Arts degree between winter term 1984 and fall term 1991. The sampling procedure was stratified according to race to ensure that a meaningful number of black students would be included. Logistic regression models were used to analyze the data.

Analyses of the data produced the following results: socio-economic status, race, and gender taken independently and in combination were not significantly related to students being cooled out when academic ability and age were controlled; age was significantly associated with students being cooled out regardless of the socio-economic status, race, gender, or academic ability of these students; the probability of students being cooled out increased with their age; only 42 of the 199 students were cooled out.

Analysis of this study's results supports the meritocratic supposition that at the identified community college access to the transfer degree appears to be unrelated to the socio-economic status, race, and gender of students in the cooling-out process. The finding that older students were more likely to be cooled out than younger students, however, calls into question whether older students in the cooling-out process are being unfairly denied access to the transfer degree.

This study concludes with the recommendation to develop a new template of the process by which community colleges serve the needs of academically deficient students seeking transfer degrees.

CHAPTER 1

INTRODUCTION

The community college movement has possessed from its beginnings in Joliet, Illinois, "great potential for facilitating universal access to higher education" (Rudolph, 1987, p. 284). Such access is often tied to the "general principle of free public education as the right and need of all youth who can profit by it" (Bogue, 1950, p. 9) and as "a partial realization of the democratic ideal that secondary school and college education should be available to everyone" (Brick, 1964, p. 5). The open-door admission policy is a cornerstone upon which the community college's commitment to access has been built. By way of this policy, students "who do not have the skills required for full participation in society" (McCabe, 1981, p. 9) can gain admission into community colleges where they have the opportunity to improve their skills and possibly earn postsecondary degrees.

While opening the door to higher education for many students who otherwise may have been locked out, community colleges have also sought to maintain their commitment to academic standards. Burton Clark argued (1960b) that such a commitment is necessary if community colleges are to retain

their credibility within higher education since institutional status is closely tied to the perceived quality of the institution's students. The effort by community colleges to maintain academic standards puts some students at risk. Those entering community colleges with deficient academic skills often are unable to graduate and fulfill their academic aspirations (Clark, 1960a, 1960b, 1980).

Clark asserted (1960a, 1960b, 1980) that many community college students enrolling in a transfer program are unprepared for college-level work. Once students have successfully completed the community college transfer program, they may pursue the baccalaureate at a four-year college or university with whom the community college has an articulation agreement. Clark pointed out (1960a, 1960b, 1980) that most community college students enrolled in the transfer program never earn transfer degrees because they lack academic ability. These students should be guided into terminal programs. Such programs are designed to prepare students "for employment" (Cohen & Brawer, 1987, p. 207). The cooling-out process is the means by which community colleges convince academically weak transfer students to move from the transfer program into a terminal program (Clark, 1960a, 1960b, 1980).

Meritocratic and Critical Theory Analyses of Cooling Out

Cooling out, according to Clark (1960a), is the process community colleges use to move low-academic-ability students out of the transfer program and into "a one- or two-year [terminal] program of vocational, business, or semiprofessional training" (p. 572). Community colleges cool out students by repeatedly signaling that the transfer program is beyond them and encouraging them to choose a terminal program more in line with their academic abilities (Clark, 1960a, 1960b, 1980). The cooling-out process begins when community colleges place students with low pre-entrance standardized examination scores into one or more college preparatory courses. By taking one or more of these courses, students are remediating "basic skills deficiencies" (Catalog 1992-1994, 1992, p. 45); they are not earning credit towards the transfer degree. In many cases, however, students taking college preparatory courses may concurrently earn credit towards the transfer degree by taking one or more college-level courses. Students get other cooling-out signals from guidance counselors, instructors in college orientation courses, poor course grades, and the registrar who may place them on academic probation. Low-academic-ability students receive such signals only until they indicate that they will leave the transfer program and enter a terminal program. These

students have been cooled out when they graduate from a terminal program (Clark, 1960a, 1960b, 1980).

Even though cooling out moves many community college students out of the transfer program, Clark argued (1980) that the process does not restrict access to higher education; on the contrary, cooling students out often helps them "find courses and career[s] . . . appropriate to their abilities" (p. 316). The cooling-out process helps students avoid failure and find a terminal program where they can find success (Clark, 1960a, 1960b, 1980). Instead of weeding students out of higher education as Clark asserted is typically done in state universities, community colleges help students gain access to higher education programs commensurate with their abilities (Clark, 1960a, 1960b, 1980).

In that community colleges sort students based on academic ability and achievement (Clark, 1982; Templin & Shearon, 1980), community colleges design the sorting out of students during the cooling-out process to be meritocratic. Community colleges accumulate during the cooling-out process an "objective record of [student] ability and performance" (Clark, 1960a, p. 572), a record that begins with pre-entrance standardized examination results and continues with course grades. This record is critical in convincing students to move from the transfer program (Clark, 1960a, 1960b, 1980). The community colleges' use of pre-entrance

standardized examinations as the first measure of academic ability within the cooling-out process is consistent with meritocratic thought since "the formal institutionalization and symbolic representation of the meritocracy in the United States has centered on intelligence, aptitude, and achievement testing" (Olneck & Crouse, 1979, pp. 3-4). Students scoring below set cut-off standards on these examinations are placed by the institution into one or more college preparatory courses. Such placement is an early signal that the transfer program may be beyond students' academic grasp and that they may wish to consider a terminal program (Clark, 1960a, 1960b, 1980).

The "objective record of [student] ability and performance" (Clark, 1960a, p. 572) and the entire cooling-out process live up to meritocratic principles, however, only if community colleges base their assessment of students upon valid and reliable measures of academic performance and ability (Herrnstein, 1971). Factors extraneous to academic ability can not be significant in predicting which students are cooled out (Hearn, 1984; Rehberg & Rosenthal, 1978). As long as these pre-entrance standardized examinations are valid and reliable measures of student academic ability and factors extraneous to academic ability are unrelated to student placement, the cooling-out process can be said to be meritocratic at least to this point in the student's career. The cooling-out process continues to be meritocratic if at

all subsequent stages community college personnel base their recommendations regarding what degrees students should pursue and all evaluations of student performance upon valid and reliable measures of student academic ability. Once again, factors extraneous to academic ability should be unrelated to these recommendations and evaluations in order for the process to remain meritocratic.

According to Brubacher (1982), "In a meritocracy justice demands that a student of superior abilities should have superior opportunities" (p. 65). One such opportunity for students at community colleges is earning the transfer degree with the possibility of then pursuing a baccalaureate at a four-year college or university. Thus, it is fitting from a meritocratic point of view that students earning terminal degrees typically may not transfer directly to the upper division of a state college or university whereas students earning transfer degrees may. Community colleges have upheld their responsibility to provide cooled-out students educational opportunity equal to that provided students earning the transfer degree since equal educational opportunity exists as long as the distribution of educational resources is proportional to the students' relative academic abilities (Brubacher, 1982; Feinberg, 1975; Giarelli & Webb, 1980; Herrnstein, 1971). Such an equitable distribution arguably exists when the cooling-out process is meritocratic; thereby, community colleges

arguably have not denied cooled-out students access to the transfer degree.

Some critics of community colleges, typically critical theorists, however, see the cooling-out process as less than equitable precisely because it aspires to meritocratic principles (Bowles & Gintis, 1976; Brint & Karabel, 1989a; Brint & Karabel, 1989b; Karabel, 1972; London, 1978; Zwerling, 1976). They take issue with a core assumption of meritocracy: the notion of valid measures of student academic ability (Archbald & Newman, 1988; Bowles, 1971; Carnoy, 1974; Karabel, 1972; Medina & Neill, 1988; Wilkerson, 1982). Because they are defined in terms on which students of social privilege tend to excel, these measures can be valid assessments of academic ability for only such students; these measures cannot be valid for all other students (Archbald & Newman, 1988; Bowles, 1971; Carnoy, 1974; Karabel, 1972; Medina & Neill, 1988; Wilkerson, 1982). Defining relative social privilege in terms of socio-economic status, race, and gender (McClelland, 1990) then leads critical theorists to reject the fairness of the cooling-out process for working-class, black, and female students (Bowles & Gintis, 1976; Brint & Karabel, 1989; Karabel, 1972; London, 1978; Zwerling, 1976). Critical theorists hold that the socio-economic status, race, and gender of such students are significantly related both to their being in the cooling-out process and to the

recommendations and evaluations they receive while within this process.

Bourdieu and Passeron (1977) explained the inherent unfairness within meritocratic measures of academic ability in terms of cultural capital--the relative value of any group's linguistic and social norms which increases the closer they are to the linguistic and social norms most valued by school personnel. In that community colleges place the most value upon the cultural capital of "the dominant culture" (Bourdieu, 1973, p. 80), all evaluations of academic ability during the cooling-out process from pre-entrance standardized examinations to guidance counselor interviews to professor evaluations are determined by how well students think and speak and write and act like middle-class white males. In this light, the lower a student's cultural capital, the more likely he or she will experience the cooling-out process and the more likely he or she ultimately will be cooled out. Clearly then, critical theorists anticipate that factors like socio-economic status, race, and gender are not extraneous from but central to measuring academic ability. The cooling-out process from this point of view denies an equitable distribution of educational opportunity for students of less than social privilege, and, thereby, it denies them access to the transfer degree.

Drawing upon Bourdieu's social reproduction theory, McClelland (1990) argued that students having "similar experiences will not respond to them in the same way . . . " (p. 104). In this case the experience in question is students receiving signals from community colleges during the cooling-out process that the transfer degree is beyond their academic grasp and a terminal program should be pursued. Once receiving any such signals, students of less than social privilege are more likely to lower their aspirations than are their more privileged peers. The latter group is more likely "to be surrounded by images of success, to be able to see the connection between effort and reward, and to believe that they are capable of achieving ambitious goals" (McClelland, 1990, p. 104). Thus, critical theorists not only see measures of academic ability as being biased against certain students within the cooling-out process, but they also see these same students as being ill-equipped to maintain their resolve for the transfer degree. They, therefore, charge that the cooling-out process is no more than another mechanism by which society checks the ambitions of students whose "cultural aspirations clash head on with the realities of the class system" (Karabel, 1972, p. 539). These students are those whose aspirations have been nurtured by the Franklinesque dream of success but whose upward mobility is not easily accommodated within a

stratified society; they are those "who have made the mistake of aspiring too high" (Zwerling, 1976, p. 81).

Clark (1980) noted the "use and potential abuse of the cooling out process" by critical theorists as a part of their "more general analyses of stratification and inequality in society" (p. 322). He took issue with the critical theorists' call for widespread educational and social reconstruction including Zwerling's outcry for "the *elimination* of junior or community colleges since they are the most class-serving of educational institutions" (Zwerling, 1976, p. 251). Finding such calls naive, Clark (1980) concluded, "One has to tread gently, even upon the cooling out process and its obviously unattractive features" (p. 326). He did note, however, that cooled-out students move into terminal programs having "lower status in both the college and society in general" (1960a, p. 572), and he did not refute the charge that certain student populations may be more inclined to be cooled out than others.

Statement of the Problem

Clark maintained (1980) that any "system of higher education that has to reconcile such conflicting values as equity, competence, and individual choice . . . has to effect compromise procedures that allow for some of each" (p. 327). The cooling-out process is one such procedure. It is built on meritocratic principles since community

colleges purport that academic ability and accumulative record determine who will and who will not be cooled out. The question, however, remains whether community colleges live up to these principles. If the socio-economic status, race, or gender of students is a significant predictor of who will be cooled out, then the cooling-out process is not purely meritocratic and access to the transfer degree is unfairly denied to students from particular segments of society.

Purpose of the Study

This study measured the cooling-out process (Clark, 1960a, 1960b, 1980) against a meritocratic definition of fairness to determine if this process denied access to the transfer degree to students from particular segments of society. The cooling-out process was fair according to meritocratic principles if personnel at the specified community college based their assessment of student performance upon valid and reliable measures of academic ability. Accordingly, factors extraneous to academic ability should not have been significantly related to which students were cooled out during this process. While controlling for two confounding variables (academic ability and age), this study assessed if socio-economic status, race, and gender taken independently and in combination were significant in predicting which students were cooled out.

For the purposes of this study, the pre-entrance standardized examinations marking the beginning of the cooling-out process and used to place students into college preparatory courses were accepted as valid and reliable. This acceptance was given because these examinations were the only uniform measures of academic ability available and academic ability needed to be controlled during the study to eliminate socio-economic status, race, and gender taken independently and in combination as significant predictors of students being cooled out because these students had less measured academic ability at the outset. These examinations' cut-off scores for placement into college preparatory courses were also accepted as valid and reliable in this study because they were applied uniformly to place students into the beginning of the cooling-out process regardless of their socio-economic status, race, or gender. Thus, this study focused its investigation on the relative fairness of the cooling-out process after this initial placement had been determined.

To address whether the cooling-out process denied access to the transfer degree to some segments of society, this study examined the following research question: Were socio-economic status, race, and gender taken independently and in combination significantly related to students being cooled out when academic ability and age were controlled?

This question explored if the cooling-out process denied access to the transfer degree to some cooled-out students in that it isolated students who had experienced the cooling-out process and controlled for their academic ability and age. It also dichotomized students into those who had been and those who had not been cooled out; it then tested for three variables said by critical theorists to be significant predictors of measured academic ability: socio-economic status, race, and gender. Analysis of this study's results, therefore, could determine if socio-economic status, race, and gender were each significant predictors of students being cooled out and if any combination of these variables was a significant predictor of students being cooled out. To the extent that one or more of these variables or combinations of variables were significant, the findings of this study would support that the cooling-out process denied access to the transfer degree to these cooled-out students as measured against meritocracy's own definition of fairness. To the extent that one or more of these variables or combinations of variables were not significant, this study's findings would not support that the cooling-out process denied such access.

Delimitations and Limitations

The following delimitations and limitations were present in this study:

1. This study was limited to determining the relationships between students being cooled out and their socio-economic status, race, and gender taken independently and in combination when academic ability and age were controlled.
2. This study was limited to determining the relative fairness of the cooling-out process only as this process existed at the designated community college. This delimitation is necessary since the cooling-out process may not play out in just the same way at any two community colleges (Clark, 1960a, 1980). The covert nature of the cooling-out process makes it improbable that variations in the process at different institutions could be controlled (Alba & Lavin, 1981; McConnell, 1960).
3. This study was limited to determining the relative fairness of the cooling-out process after students had been placed into one or more college preparatory courses based upon their pre-entrance standardized examination results.
4. The results of this study should not be generalized beyond the setting of the study.

Justification of the Study

The motivations for determining whether the cooling-out process denied access to the transfer degree to some cooled-out students are threefold. First, community colleges have long been praised for their role in increasing access to higher education (Bogue, 1950; Brick, 1964; Gleazer, 1980; Harlachner, 1969). This study's results further the knowledge about the community colleges' role in making higher education accessible to all segments of society by testing the claim that the cooling-out process is purely meritocratic. If access to all levels of higher education is to be equitably provided, a vital process like cooling out by which community colleges rectify the inherent conflict between open access and academic standards must be fair.

Second, this study's results further the knowledge about the cooling-out process itself. The few studies purporting to test the relative fairness of the cooling-out process against meritocratic principles (Baird, 1971; Kaliszeski, 1986; Moore, 1975; Olandt, 1987) have produced inconclusive findings. Of these studies, moreover, only Baird (1971) controlled for academic ability, and none tested for interaction between predictor variables. This study both controlled for academic ability and tested for interaction between predictor variables. The necessity of controlling for academic ability was to eliminate socio-

economic status, race, and gender taken independently and in combination as significant predictors of students being cooled out because these students had less measured academic ability at the outset. If academic ability had not been controlled, any relationship between the predictor and criterion variables could have been confounded by pre-existing differences in academic ability. Such differences in academic ability, according to meritocratic guidelines, would warrant students with deficient academic skills being cooled out at a higher rate than more gifted students regardless of their socio-economic status, race, or gender. Determination that such cooled-out students had their access to the transfer degree denied, thereby, would have been impossible. The necessity of testing for interaction between predictor variables, moreover, was to avoid "an oversimplification or inaccurate understanding of what occurs in schools . . . [leading] to inappropriate or simplistic prescriptions for educational equity" (Grant & Sleeter, 1986, p. 197).

Third, this study's results provide a basis for improving community colleges since "somewhere between one-third and one-half" (Clark, 1960a, p. 572) of community college students nationally are destined to be cooled out. The possible determination that some students from certain segments of society had been unfairly cooled out would then allow community colleges to address such inequities. It

also would supplement student understanding of the means of institutional social control oppressing them and help students wrestle this control from the institution (Aronowitz & Giroux, 1985; Freire, 1988; Giroux, 1983; Giroux, 1988).

Definition of Terms

For the purposes of this study, the following terms were defined thusly:

Community colleges were defined as "institutions that offer associate degrees and occupational certificates to their students and a variety of other services to the communities in which they are located" (Cohen & Brawer, 1987, p. xv).

Social privilege was defined as a composite of socio-economic status, race, and gender.

Socio-economic status (SES) was defined in terms of the Pell Grant Index Number (PGIN) for all students requesting financial aid; students not requesting financial aid were assigned a PGIN of 7360 which was one integer higher than the highest PGIN of students requesting financial aid.

Race was limited to the categories black or white.

Academic ability was defined in terms of a composite index of reading and mathematics scores on the American College Test (ACT), Scholastic Aptitude Test (SAT), or Computerized Placement Test (CPT).

Age was identified at the time of first enrollment at the specified community college.

The cooling-out process was defined as stipulated by Clark (1960a, 1960b, 1980). It is a mechanism by which community colleges convince academically weak transfer students to move from the transfer program into a terminal program.

Students had been cooled out if after enrolling in the transfer program and being placed into one or more college preparatory courses due to low pre-entrance standardized examination scores, they graduated with a terminal degree--an Associate of Science degree.

Students had not been cooled-out if after enrolling in the transfer program and being placed into one or more college preparatory courses due to low pre-entrance standardized examination scores, they graduated with a transfer degree--an Associate of Arts degree.

Transfer students were defined as those students enrolled in the Associate of Arts degree program.

CHAPTER 2

REVIEW OF THE RELATED LITERATURE

This study measured the cooling-out process (Clark, 1960a, 1960b, 1980) against a meritocratic definition of fairness to determine if this process denied access to the transfer degree to students from particular segments of society. An overview of the following issues related to this study's purpose is presented in this chapter: Clark's cooling-out process, the community college and access to higher education, and meritocratic and critical theory analyses of affecting access via cooling out.

Clark's Cooling-Out Process

In a case study of San Jose Junior College, Burton Clark (1960a, 1960b, 1980) defined the cooling-out function of the community college as a covert institutional process designed to convince students whose academic aspirations exceed their academic abilities to move out of the transfer degree program and into a terminal degree program. The cooling-out function is intended "to let down hopes [of students] gently and unexplosively" (Clark, 1960a, p. 574) while maintaining the academic integrity of the community college's university-parallel function. Clark added that

cooling out had another function: it improved the academic skills of some students and made it possible for them to be "drawn into higher education rather than taken out of it" (1960a, p. 575).

The cooling-out process, Clark said (1960a, 1960b, 1980), begins with pre-entrance testing. Such tests are used by community college personnel to place students into one or more college preparatory courses and establish the college's "objective record" (1960b, p. 71) of students' academic skills. Cooling out proceeds with guidance counselor interviews to assist students in their selection of courses. A college orientation course designed to raise student awareness of their "own capacity in relation to educational and occupational choices" (1960b, p. 73) is another part of the cooling-out process. Additional parts of this process are academic feedback that reinforces the community college's assessment of the students' academic abilities and--if students persist by maintaining a transfer curriculum identification in spite of earning poor course evaluations--placement onto academic probation to inform students of their academic peril while keeping a door open for them to pursue an alternative terminal curriculum. If all else fails to deter such students, they ultimately face academic dismissal. Students in the cooling-out process who improve their academic abilities do not change to a terminal degree program but stay in their original transfer degree

program despite experiencing institutional nudging to do otherwise.

Clark's cooling-out function has gained considerable attention from people in the higher education research community (Goodwin, 1976; Moore, 1975) even though few studies have tested Clark's claims. Only two studies (Kaliszeski, 1986; Moore, 1975) arguably advance Clark's claim. Both studies attest to the effectiveness of the cooling-out process in convincing students to change to a terminal degree program, but only the latter focused specifically on those students Clark saw as being specifically within the cooling-out process. Kaliszeski (1986) found 31.5 percent of sampled students to have followed the cooling-out process ending within a terminal degree program. Furthermore, Moore (1975) found that women in her sample experienced portions of the cooling-out process to differing degrees and tended to have their career choices altered from nontraditional to traditional. Consequently, their curricular identification tended to be lowered from transfer to terminal. She drew her sample of female students on the basis of their identified career choices and argued those students with nontraditional career choices were analogous to students within the cooling-out process.

Three other studies (Baird, 1971; Fitch, 1969; Olandt, 1987), however, challenge the credibility of Clark's claim

that students within the cooling-out process typically change from the transfer to a terminal degree program. Baird (1971), who did not examine whether students participated in specific segments of the cooling-out process, found that only 12.5 percent of his sample changed from the transfer to a terminal degree program and that those who did tended not to be students typically within the cooling-out process. Fitch (1969) and Olandt (1987), moreover, focused on only one portion of the cooling-out process, student placement on academic probation. Fitch found that only 10.4 percent of students changed to a terminal degree program after being placed on academic probation. Olandt found that only 8.8 percent of students made this same program change after being placed on academic probation.

Simon (1967) accepted the face validity of the cooling-out process in her analysis of the role of an integrated counseling program in easing students through this process. She determined that "the institution as a whole cooperates in this endeavor, with a guidance orientation setting the stage, both for faculty and students" (p. 978). London (1978), on the other hand, found in his case study of City Community College that most students were not successfully eased through the cooling-out process. Instead students experiencing this process bore "wounds of blocked opportunity [that] fester rather than heal. To say that

students repress such unpleasant thoughts is perhaps a bit wishful unawareness by those who subscribe to the harmlessness of the 'cooling-out' function" (p. 153).

The studies cited above by Baird, Kaliszeski, Moore, and Olandt have also produced inconclusive findings when testing the relative fairness of the cooling-out process against meritocratic principles. Baird (1971) found the SES of women cooled out to be higher than of women not cooled out, a finding antithetical to critical theory predictions. Kaliszeski (1986) found gender not to be a significant predictor of who would be cooled out. He did find, however, that "cooling out occurs significantly more often with minority students than with white students" (p. 107). Moore (1975) found that women tended to experience pressures from the community college and other sources to change from the transfer to a terminal program and concluded by questioning "the utility and necessity of a process that results in women being rechannelled because they are women" (p. 583). Finally, Olandt (1987) concluded that SES and gender are positively associated with enrollment in "the non-transfer career-oriented curriculum" (p. 110) while race is not.

In addition to the mixed empirical results of studies examining the community college's cooling-out process, obstacles exist in identifying specific mechanisms within the cooling-out process, especially since it is a covert process (Alba & Lavin, 1981; McConnell, 1960). An

additional obstacle exists in the inconsistencies in the degree to which different studies control for institutional and student variables factoring into the cooling-out process (Dougherty, 1987; Velez, 1985). These obstacles effectively call into question both the methodological rigor of studies examining the cooling-out process and the conclusions that can be drawn from them.

Nonetheless, higher education studies ranging in topics from the examination of differences in native community college and four-year college student rates of earning a baccalaureate (Astin, 1978; Clowes & Levin, 1980; Levin & Clowes, 1980) to the lowering of community college presidential aspiration immediately prior to the leaving of office (Cohen & March, 1974; Vaughan, 1989) have used a generic notion of cooling out. In such studies, "cooling out" is synonymous with a nebulous lowering of aspiration. These studies are of marginal importance to the cooling-out literature since the former studies did not control for various institutional and/or student variables and the latter studies were completely divorced from the community college's university-parallel function. Thus, these studies neither confirm nor contest the accuracy of Clark's cooling-out process, but they do enhance its face validity.

The Community College and Access to Higher Education

Access to higher education must not be confused with universal attendance since "many will not want to attend, and there will be others who will not benefit sufficiently from attendance to justify their time and the expense involved" (Carnegie, 1970, p. 15). Nonetheless, the community college's open-door policy brings into college many types of students who were previously left out of higher education (McCabe, 1981). These students include those who are living in the community the institution serves, those who are looking for a second chance within higher education, and those who are "handicapped by problems of cost and transportation" (Gleazer, 1980, p. 7).

Once at the community college, Cohen and Brawer noted that not "more than one in twenty enrollees completes a two-year program and transfers in the succeeding term" (1987, p. 54). Of those who do transfer to upper division, a study of fifteen Florida community colleges by Sawyer and Nickens (1980) determined that students at these institutions between 1967 and 1977 did not have their opportunity to transfer to the upper division diminished due to their SES: Students of low SES were as likely as those of higher SES to earn the transfer degree. Sawyer and Nickens concluded that SES "was not related in a practical magnitude to students continuing their education after graduation from Florida community colleges" (p. 122).

A benefit to these students brought into postsecondary education by the community college is their being able to acquire the "necessary knowledge to live a fuller, more productive life in a democratic society" (Harlacher, 1969, p. 1). Such a life for some community college students means being able to transfer to the upper division of a college or university; for others it means moving into the job market after graduation. Even for those not moving to the upper division of a college or university, the credentials obtained at the community college are valuable. For example, R. Bruce Judd (1990) argued the community college Associate of Arts degree for students not transferring to the upper division of a college or university is of greater value in terms of employer hiring decisions than a high school diploma alone and of greater value in terms of direct financial rewards than the baccalaureate for nearly 50 percent of the sampled community college graduates.

Critics of the community college, on the other hand, commonly take issue with the community college's supposed ability to provide universal access to higher education by noting that such access to the baccalaureate is fallacious. In a comprehensive literature review of studies investigating the impact of community college enrollment on access to the baccalaureate, Dougherty (1987) concluded that "baccalaureate aspirants who enter community colleges attain

fewer bachelor's degrees and less years of education than students who enter four-year colleges" (p. 91). In one study cited by Dougherty, Velez (1985) determined that of sampled four-year college students and community college students in transfer programs "79 percent of the four-year college entrants had finished [i.e., earned a baccalaureate], compared to only 31 percent of the two-year entrants" (p. 197).

This restricted access to the baccalaureate has direct economic and occupational repercussions argue critical theorists. In a comprehensive literature review of studies investigating the impact of community college enrollment on economic attainment, Dougherty (1987) concluded that "among students who aspire to a baccalaureate, students who enter community colleges fare less well economically than comparable students who enter four-year colleges" (p. 94). Moreover, Anderson (1984) concluded in her comparative study of community college and four-year college student occupational attainment that students entering "two-year public colleges later hold jobs that deal more with 'things,' and less with either 'paper' or 'ideas' than students entering any other kind of institution" (p. 18). Bowles and Gintis (1976) saw such blunted realized worth of community college students not

as a failure of the community college movement, but rather as a successful adaption to the tasks which they [community colleges] were set up to perform: processing large numbers of students to attain that particular

combination of technical competence and social acquiescence required in the skilled but powerless upper-middle positions in the occupational hierarchy of the corporate capitalist economy. (p. 212)

Affecting Access via The Cooling-Out Process:
Meritocratic and Critical Theory Analyses

Within the meritocratic interpretation of equal educational opportunity, society affords educational opportunity to students if the distribution of educational resources is proportional to students' relative academic abilities (Brubacher, 1982; Feinberg, 1975; Giarelli & Webb, 1980; Herrnstein, 1971). Accordingly, community colleges fairly offer students access to higher education as long as these students are given the opportunity to be as successful as their academic skills will allow. Factors like SES, race, and gender are irrelevant to the community college's interpretation of student ability according to the meritocratic argument; in reality this argument holds that such extraneous factors do affect the extent to which students are successful academically but much less so than does their academic ability (Hearn, 1984; Rehberg & Rosenthal, 1978).

Critical theorists differ from meritocrats in that to the former schools fulfill their responsibility to provide students equal educational opportunity only if the distribution of educational resources is inversely proportional to students' relative degree of social

advantage (Apple, 1990). Far from providing equal educational opportunity, however, critical theorists say community colleges disproportionately filter out students who are poor, black, and female (Brint & Karabel, 1989b; Dougherty, 1987; Zwerling, 1976). In their research, critical theorists typically ask whether community colleges are using the cooling-out process to prevent most disadvantaged students from achieving occupational and financial upward mobility (Zwerling, 1976).

Meritocrats view the cooling-out process in a different light. In their view, cooling out would be fair and just if community college personnel placed students into the process using valid and reliable measures of their academic ability (Herrnstein, 1971). Clark identified the measure typically used for such placement as being pre-entrance standardized examinations like the College Placement Test. Thus, the cooling-out process at this point is fair according to meritocratic guidelines as long as these examinations are valid and reliable measures of student academic ability, the cut-off scores for placement into college preparatory courses are valid for dichotomizing those students who do and who do not need college preparatory courses, and factors extraneous to academic ability are insignificant in determining student placement.

The critical theory rebuttal to the meritocratic view of placement into the cooling-out process contends that

measures of academic ability like pre-entrance standardized examinations typically are biased. They are designed to assist students of social privilege (Archbald & Newman, 1988; Bowles, 1971; Carnoy, 1974; Karabel, 1972; Medina & Neill, 1988; Wilkerson, 1982). Such measures, therefore, are inherently biased, leading to unfair placement into the cooling-out process.

Once students have been placed into the cooling-out process by having to take one or more college preparatory course, the meritocratic argument would hold they are treated fairly if at all stages of this process (i.e. guidance counselor interviews, academic feedback from courses including a college orientation course, and possibly placement onto academic probation and then academic dismissal) community college personnel base their recommendations regarding what degrees students should pursue and all evaluations of student performance upon valid measures of student academic ability. Factors extraneous to academic ability must continue to be insignificant in order for the process to remain fair. Accordingly, students cooled out during this process are not unfairly denied access to the transfer degree. If such students are cooled out, the likelihood of their academic success on some level is heightened. If they are not cooled out, either they would likely experience academic failure or the community college would have to compromise its academic standards by

allowing them to experience academic success and eventually earn the academic credentials for transfer to the upper division of a college or university. This latter possibility threatens the legitimacy of the community college's university-parallel function (Clark, 1960a, 1960b, 1980; Cohen, Brawer, & Lombardi, 1971).

To critical theorists, however, variables related to social privilege such as SES, race, and gender (McClelland, 1990) influence how community college personnel counsel students about their academic goals and evaluate their academic performances more so than does student academic ability (Brint & Karabel, 1989b; Zwerling, 1976). Students who are cooled out, therefore, are denied access to the transfer degree. Some critical theorists would promote such a determination since they view schools as democratic sites where students and teachers are on the front line of a struggle to understand the means of institutional social control oppressing them and to wrestle this control from the institution (Aronowitz & Giroux, 1985; Freire, 1988; Giroux, 1983; Giroux, 1988):

knowledge and power intersect [within schools] in a pedagogy of cultural politics so as to give students the opportunity to not only understand more critically who they are as part of a wider social formation, but also to help them critically appropriate those forms of knowledge that traditionally have been denied to them. (Giroux, 1988, p. 206)

Accordingly, if the cooling-out process is unfair to certain students, such knowledge would supplement student power to

eradicate the class-based structure of the community college and, thereby, must be sought.

The following chapter establishes the methodology by which this study tested the fairness of the cooling-out process. That chapter is followed by this study's results and discussion of its principal findings.

CHAPTER 3

RESEARCH METHODOLOGY

This study measured the cooling-out process (Clark, 1960a, 1960b, 1980) against a meritocratic definition of fairness to determine if this process denied access to the transfer degree to students from particular segments of society. Discussed in this chapter is the methodology employed by this study to address this issue. Included are the study's null hypothesis and statistical applications, its definition of variables, its population and setting, and its data collection procedures.

Null Hypothesis and Statistical Applications

The following research question was posed to investigate the cooling-out process (Clark, 1960a, 1960b, 1980) against a meritocratic definition of fairness for the sake of determining if this process denied access to the transfer degree to students from particular segments of society: Were socio-economic status, race, and gender taken independently and in combination significantly related to students being cooled out when two confounding variables (academic ability and age) were controlled?

This research question was tested by the following null hypothesis: Socio-economic status, race, and gender taken independently and in combination were not significantly related to students being cooled out when two confounding variables (academic ability and age) were controlled.

A logistic regression was employed to test the null hypothesis. This specific application of a generalized linear model was appropriate for this null hypothesis since the criterion variable, having been cooled out or not having been cooled out, was dichotomous instead of continuous as is the case in most regression models (Agresti, 1990). Unlike the likelihood-ratio chi-squared statistic, moreover, a logistic regression had the capability of discerning the relationship between the criterion variable and multiple predictor variables (SES, race, and gender), taken independently and in combination, even as one of these predictor variables, SES, was a continuous interval variable (Cohen & Manion, 1989). A logistic regression also was valid with retrospective data (Agresti, 1990) as were present in this study.

Definition of Variables

SES was one of three predictor variables used to evaluate the cooling-out process. For the purposes of this study, SES was operationalized as the Pell Grant Index Number (PGIN) applied to each student requesting financial

aid. The PGIN was a continuous interval ranging in value from 0 to 9999; the lower the PGIN, the less able the student and/or his family was to pay for the student's postsecondary education (Boren, 1989). Students not requesting financial aid were assigned a PGIN of 7360 which was one integer higher than the highest PGIN of students requesting financial aid.

Race was the second predictor variable used to examine the cooling-out process. It was limited to the categories black or white since the potential sample for all other racial groups was too small to yield meaningful results.

Gender was the final predictor variable used to examine the cooling-out process.

Academic ability was a moderator variable included in the analysis of the cooling-out process to control for inherent discrepancies in student academic ability at the onset of his or her postsecondary career. For the purposes of this study, academic ability was operationalized as each student's composite score on the American College Test (ACT), Scholastic Aptitude Test (SAT), or Computerized Placement Test (CPT). The SAT and CPT composite scores were converted to ACT-score equivalents using appropriate concordance tables (Houston & Sawyer, 1991; Marco & Abdel-Fattah, 1991; Miller, 1991; Smittle, DeLaino, & Mott, 1989). The academic ability variable was a continuous interval variable ranging in value from 1 to 36.

Age was a second moderator variable included in the analysis of the cooling-out process since black students often are older than white students (Cohen & Brawer, 1987). It was a continuous interval variable and was a record of each student's age at the outset of his or her first term at the specified community college.

Cooled-out status was the dichotomous criterion variable used to evaluate the cooling-out process. Students graduating with a terminal degree after enrolling in the transfer program and being placed into one or more college preparatory courses due to low pre-entrance standardized examination scores had been cooled out. Students graduating with a transfer degree after enrolling in the transfer program and being placed into one or more college preparatory courses due to low pre-entrance standardized examination scores had not been cooled out.

Design of the Study

This study employed a correlational design. It drew from Clark's theory of the community college's cooling-out process that students in this process who graduate with a terminal degree have been cooled out while students in the same process who graduate with the transfer degree have not been cooled out. The criterion variable stemmed from this observation, and the possible relationships between this

criterion variable and the predictor variables, taken independently and in combination, were examined.

Population and Sampling Procedures

This study drew its sample from students at a Florida community college who had earned either an Associate of Science degree or an Associate of Arts degree between winter term 1984 and fall term 1991. The sampling procedure was stratified according to race to ensure that a meaningful number of black graduates would be included within the study since 94.9% of the graduates were white and only 5.1% were black. Race was limited to the categories black and white since the potential sample for all other racial groups was too small to yield meaningful results. The sampling procedure was not stratified according to any other demographic variable.

All 103 black graduates who were determined to have been exposed to the initial stage of the cooling-out process were selected. These 103 black graduates represented 23.6% of the total 437 black graduate population. Also included were 96 white graduates who were determined to have been exposed to the initial stage of the cooling-out process. These 96 white graduates represented 1.2% of the total 8,118 white graduate population and 10.7% of the 900 white graduates who were randomly selected from the total white graduate population. The sampled graduates were exposed to

the initial stage of the cooling-out process if during registration they identified themselves as intending to earn an Associate of Arts degree, but they were subsequently placed into one or more college preparatory courses due to their scores on a pre-entrance standardized examination (Catalog 1988-89, 1988).

Setting of the Study

The community college from which the study's population was drawn was selected for the following reasons: as a comprehensive community college, it enrolled between winter term 1984 and fall term 1991 a percentage of its students in the Associate of Arts curriculum and some of these students would have found themselves in the cooling-out process; a refined system of pre-entrance testing existed to place students either into college preparatory or college-level courses; the college's mix of 85.0% white students and 8.0% black students (Delaino & Grunder, 1990) was similar to the mix of 84.0% white and 8.0% black students in Florida's Community College System when excluding Miami-Dade Community College (Florida Department of Education, 1991); the college's mix of 53.0% female students to 47.0% male students (Delaino & Grunder, 1990) was similar to the mix of male and female students throughout most of Florida's community colleges (Florida Department of Education, 1991);

and student demographic, financial, and academic data both existed and were accessible.

This specified community college's cooling-out process remained relatively unchanged during the time the graduates in this study attended this institution. It began with pre-entrance testing to place students into one or more college preparatory courses. Prior to 1981 no such testing and placement existed at this college. In 1981 the college began requiring most entering students to possess American College Test (ACT) scores which from 1981 to 1985 were used by counselors to encourage but not to mandate student placement into one or more college preparatory courses. Students exempted from such testing were those who had already earned at least an Associate of Arts degree, those who enrolled in only certificate programs, and those who transferred or reapplied and had already successfully completed certain core English and mathematics courses.

In 1986, the Florida Department of Education established State Rule 6A-10.315 which dictates that community colleges test entering students enrolling in degree programs and place any of these students with academic deficiencies within the college preparatory program. In accordance with this state dictate, this community college has used pre-entrance testing to place students within the college preparatory program ever since. As Clark found at San Jose Junior College (1960a, 1960b,

1980), this community college's administration consistently has viewed pre-entrance test scores as "an indication of the student's achievement of college level communication and computation competencies" (Catalog 1988-89, 1988, p. 17) and the possible subsequent college preparatory placement as intending "to help applicants realize their potential as students" (Catalog 1988-89, 1988, p. 17).

The cut-off scores for placement into this institution's college preparatory program were higher on occasion than the state's mandated cut-off scores, meaning this community college placed more students into the initial phase of the cooling-out process than community colleges rigidly following the state's cutoff scores. This college's and the state's cutoff scores for the ACT, SAT, and CPT are presented in Table 1.

The following courses comprised the college preparatory program into which this community college placed students: MAT 0020/L College Prep Math I, MAT 0024 Elementary Algebra, ENC 0020/L Basic Writing Skills and Lab, REA 0010/L College Prep Reading. Students did not earn college credit for successfully completing courses within this program, but these courses were "counted for financial aid and athletic eligibility" (Institutional Self Study Report 1990-1992, 1991, p. 65). Also, grades from college preparatory courses were "included in the 'All College Cum GPA' but [were] not . . . included in calculation of deficit points for purposes

of academic progress" (Catalog 1988-89, 1988, p. 37).

According to State Rule 6A-10.315, students were allowed to enroll in each of the college preparatory courses only three times.

Table 1

ACT, SAT, and CPT Cutoff Scores

	<u>College's Cutoff Scores</u>	<u>State's Cutoff Scores</u>
<u>Reading</u>		
ACT	13	13
SAT	330	330
CPT	80	71
<u>Writing</u>		
ACT	14	14
SAT	30	30
CPT	82	77
<u>Arithmetic</u>		
ACT	12	12
SAT	340	340
CPT	85	85
<u>Algebra</u>		
ACT	15	12
SAT	390	390
CPT	76	50

An advisor with the college preparatory program was available to counsel students as to their placement into the

program. Additionally, this community college had an orientation process during which first semester freshmen were required to meet with an academic advisor prior to their registration. During this meeting, students were given information "regarding the courses necessary to accomplish a given major, and graduation from the college" (Catalog 1988-89, 1988, p. 16). As many as half of these entering freshmen, however, typically enrolled after the orientation process and never met with an academic advisor. Freshmen subsequently received a computer-generated letter during the first term encouraging them to meet with an academic advisor to explore further "career goals and the various programs which . . . [assisted] in achieving them" (Catalog 1988-89, 1988, p. 17). As few as 20% of these freshmen, on average met with an academic advisor during this first term. Students whose cumulative grade point average (GPA) fell below a 2.0 on a 4.0 scale received a computer-generated letter encouraging them to meet with an academic advisor.

Students whose GPA's fell below a 2.0 on a 4.0 scale were placed on academic warning, academic probation, or academic suspension depending upon how far below a 2.0 their GPA's fell; students placed onto probation were suspended for one semester. "To be considered in good standing and continue successfully toward a degree" (Catalog 1988-89, 1988, p. 36), students in academic difficulty had to return

their GPA's to 2.0 or higher and maintain such a GPA until graduation.

Beginning in the 1988-1989 academic year, students whose GPA fell below a 2.0 on a 4.0 scale were "required to participate in a reality therapy workshop in which they . . . [were] encouraged to assume responsibility for themselves and their successes or failures" (Institutional Self Study Report 1990-1992, 1991, p. 221). These workshops, according to their director, attempted to bring about "small shifts in [student] behavior" if it was this behavior, for example poor study skills, leading to the students' academic failures. On the other hand, if students seemed to be aspiring beyond their academic abilities, the workshop was designed to encourage students to "look at other options that do not require as many difficult courses."

Data Collection Procedures

Once the sample for the study had been selected, computerized student history and financial aid files provided for each member of this sample the scores on one of three pre-entrance standardized examinations, the PGIN or this number's absence, the race, the gender, and the degree earned. Each student's original application form was examined to determine the degree he or she intended to pursue upon entering the community college. These data were then used to test the claim that meritocratic criteria alone

were significant in dictating who had been cooled out and who had not been cooled out.

The data collection procedures as described in this chapter were reviewed and approved by the Institutional Review Board at the University of Florida and the Director of Institutional Research at the designated community college.

CHAPTER 4

RESULTS

This study measured the cooling-out process (Clark, 1960a, 1960b, 1980) against a meritocratic definition of fairness to determine if this process denied access to the transfer degree to students from particular segments of society. Discussed in this chapter are the results of this study. Included are descriptive characteristics of the sample, the relationships between various predictor and moderator variables, the study's null hypothesis, additional analysis of age, analysis of the study's statistical power, and a summary of the study's findings.

Descriptive Characteristics of the Sample

Analyses were run for 103 black students and 96 white students. Only 42 of these 199 students--21.1% of the total--were cooled out. The 103 black students represent all of the black graduates from the selected community college who earned either an Associate of Science degree or an Associate of Arts degree between winter term 1984 and fall term 1991 and who had been exposed to the initial stage of the cooling-out process; the 96 white students, culled from 900 white graduates who were randomly selected from the

total white graduate population, represent those white graduates from this same community college who earned either an Associate of Science degree or an Associate of Arts degree between winter term 1984 and fall term 1991 and who also were exposed to the initial stage of the cooling-out process out.

Of these 199 students, 54 had an SES of zero and 91 had an SES of 7360. Due to this bipolar distribution of the SES variable, separate analyses were run first using the full range of data and second excluding data for students with SES of zero and 7360.

Table 2 presents race and gender composition for the students in the study. Although on average only 9.1% of the students at the specified community college were black compared to 83.4% white, stratified sampling resulted in the racial composition of the sample being 51.8% black and 48.2% white. The gender composition of the sample, 66.8% female and 33.2% male, is roughly comparable to the gender composition of the entire community college's graduate population earning Associate of Arts or Associate of Science degrees between winter term 1984 and fall term 1991, 60.7% female and 39.3% male.

Table 3 presents the range, mean, and standard deviation for the academic ability, age, and SES of students in the study. The wide range in academic ability from 2 to 20 is not surprising in that all students with a high school

diploma or its equivalent may apply for admission into the specified community college; this range probably would have been even greater if this study's sample of students had included those not testing into one or more college preparatory courses. The wide range in age from 18 to 40 also is not surprising since the community college has a dual-enrollment program with the high schools in its district as well as programs like the reentry women's program; the former program permits students, some who may be in their mid-teens, to take college courses and, thereby, graduate at a relatively young age; the latter program actively recruits women from the community college's district who are seeking to reenter the work force.

Table 2

Race and Gender Characteristics of Sample by Frequency and Percent

Characteristic	Frequency ^a	Percent
Race		
Black	103	51.8
White	96	48.2
Gender		
Female	133	66.8
Male	66	33.2

Table 2--continued

Characteristic	Frequency ^a	Percent
Race by Gender		
Black Female	72	36.2
Black Male	31	15.6
White Female	61	30.7
White Male	35	17.6

^aN = 199

Table 3

Characteristics of Students by Range, Mean and Standard Deviation

Characteristic	Range	Mean	<u>SD</u>
Academic Ability	2-20	13.0000	3.49891
Age	18-40	23.4171	4.57727
SES	0-7360	3720.11	3463.12

The SES range of 0 to 7360 is explained by 0 being the value attributed to students who were expected by the federal government to contribute nothing financially to their own education and 7360 being the value attributed to

students who did not apply for financial aid at any point during their tenure at the community college presumably because they and/or their families possessed sufficient financial resources not to need government assistance. Students with an SES value ranging from 0 to 7359 had applied for financial aid, and the lower the value attributed to them the less financially capable they were to pay for their education.

Relationships between Various Predictor and Moderator Variables

Since critical theorists anticipate that academic ability as measured by standardized examinations is tied to the SES, race, and gender of students, the relationships between these variables were examined during the course of this study. Analyses revealed that academic ability was significantly correlated to SES ($r = 0.24$; $p < 0.01$) and that a significant relationship existed between academic ability and race (presented in Table 4). No significant relationship was found between academic ability and gender (presented in Table 5).

In that critical theorists also anticipate SES is tied to the race and gender of students, the relationships between these predictor variables were examined during the course of this study. Analyses revealed that significant relationships existed both between SES and race (presented

in Table 6) and between SES and gender (presented in Table 7).

Table 4

T-Test Comparing Academic Ability by Race

Race	N	Mean	Std Dev	Error	Variances	t	DF	<u>P</u>
Black	103	11.61	3.14	0.31	Unequal	-6.34	194.8	0.00
White	96	14.49	3.25	0.33	Equal	-6.35	197.0	0.00*

For H₀: Variances are equal, $F' = 1.07$ DF = (95,102)

P > $F' = 0.7250$

*Significance at 0.01

Table 5

T-Test Comparing Academic Ability by Gender

Gender	N	Mean	Std Dev	Error	Variances	t	DF	<u>P</u>
Female	133	12.76	3.49	0.30	Unequal	-1.38	129.5	0.17
Male	66	13.48	3.50	0.43	Equal	-1.38	197.0	0.17

For H₀: Variances are equal, $F' = 1.00$ DF = (65,132)

P > $F' = 0.9642$

Table 6

T-Test Comparing SES by Race

Race	N	Mean	Std Dev	Error	Variances	t	DF	P
Black	103	1971.46	2977.52	293.38	Unequal	-8.65	196.4	0.00
White	96	5596.27	2933.45	299.39	Equal	-8.64	197.0	0.00*

For H0: Variances are equal, $F' = 1.03$ DF = (102,95)

$P > F' = 0.8846$

*Significance at 0.01

Table 7

T-Test Comparing SES by Gender

Gender	N	Mean	Std Dev	Error	Variances	t	DF	P
Female	133	3310.84	3437.01	298.03	Unequal	-2.41	131.3	0.02
Male	66	4544.85	3392.66	417.61	Equal	-2.40	197.0	0.02*

For H0: Variances are equal, $F' = 1.03$ DF = (132,65)

$P > F' = 0.9232$

*Significance at 0.05

Null Hypothesis

A logistic regression model was used to test the null hypothesis that SES, race, and gender taken independently and in combination were not significantly related to students being cooled out when two confounding variables (academic ability and age) were controlled. Analyses were run with the full logistic regression model, first examining main effects of all predictor and moderator variables as well as interactions between all of these variables. Predictor variables included SES, race, and gender; moderator variables included academic ability and age. The interpretation of these results (presented in Tables 8 and 9) revealed no significant relationships with the criterion variable.

Next, analyses were again run with the full logistic regression model, but this second set of analyses examined the main effects of all predictor and moderator variables while excluding the interactions between the predictor variables. These interactions were excluded to verify that they were not obscuring the main effects relationships between the predictor and moderator variables and the criterion variable. The interpretation of these analyses' results (presented in Tables 10 and 11) also revealed no significant relationships with the criterion variable.

Table 8

Logistic Regression Analysis of Main and Interaction Effects of Predictor and Moderator Variables on Cooled Out

Effect	Estimated Coefficient	Standard Error	Chi-Square	P
Academic Ability	0.0136	0.0400	0.12	0.7329
Age	-0.0377	0.0278	1.84	0.1750
SES	0.00002	0.000044	0.20	0.6534
Race	0.0778	0.2412	0.10	0.7469
Gender	-0.0753	0.2329	0.10	0.7464
SES*Race	-0.00001	0.000045	0.06	0.8136
SES*Gender	2.827E-7	0.000045	0.00	0.9949
Race*Gender	0.0324	0.2331	0.02	0.8893
SES*Race*Gender	1.014E-7	0.000045	0.00	0.9982
Residual			23.04	1.0000

Table 9

Logistic Regression Analysis of Main and Interaction Effects of Predictor and Moderator Variables on Cooled Out when Excluding Zero and 7360

Effect	Estimated Coefficient	Standard Error	Chi-Square	P
Academic Ability	-0.00438	0.0906	0.00	0.9614
Age	-0.0203	0.0687	0.09	0.7676
SES	-3.31E-6	0.000248	0.00	0.9894

Table 9--continued

Effect	Estimated Coefficient	Standard Error	Chi-Square	P
Race	0.2276	0.5104	0.20	0.6557
Gender	-0.0960	0.4899	0.04	0.8447
SES*Race	-0.00009	0.000251	0.12	0.7325
SES*Gender	0.000026	0.000242	0.01	0.9147
Race*Gender	-0.2344	0.4879	0.23	0.6309
SES*Race*Gender	0.000153	0.000245	0.39	0.5318
Residual			5.79	1.0000

Table 10

Logistic Regression Analysis of Main Effects of Predictor and Moderator Variables on Cooled Out

Effect	Estimated Coefficient	Standard Error	Chi-Square	P
Academic Ability	0.0121	0.0396	0.09	0.7594
Age	-0.0387	0.0274	2.00	0.1570
SES	0.000018	0.000043	0.17	0.6781
Race	0.0427	0.1566	0.07	0.7854
Gender	-0.0687	0.1371	0.25	0.6164
Residual			23.17	1.0000

Table 11

Logistic Regression Analysis of Main Effects of Predictor Variables on Cooled Out when Excluding Zero and 7360

Effect	Estimated Coefficient	Standard Error	Chi-Square	P
Academic Ability	0.00528	0.0885	0.00	0.9524
Age	-0.0171	0.0659	0.07	0.7950
SES	0.000065	0.000178	0.13	0.7173
Race	0.1445	0.3434	0.18	0.6740
Gender	-0.0668	0.2750	0.06	0.8081
Residual			6.19	1.0000

Before concluding that the null hypothesis was not rejected, those predictor and moderator variables with a p -value less than 0.25 were selected in an effort to build "the most parsimonious model that still explains the data" (Hosmer & Lemeshow, 1989, pp. 82-83). Only the moderator variable age had a p -value less than 0.25: $p = 0.1570$ in Tables 8 and 10 where the full range of data was used. Accordingly, a logistic regression model was used to test the relationship between age and the criterion variable. The results of this analysis (presented in Table 12) revealed a significant relationship with the criterion variable.

Table 12

Logistic Regression Analysis of Age on Cooled Out

Effect	Estimated Coefficient	Standard Error	Chi-Square	P
Age	-0.1146	0.0346	10.93	0.0009*
Residual			7.57	0.1818

*Significance at 0.01

The model used to interpret this significant relationship between age and the criterion variable, cooled out, is as follows:

$$\text{Log(odds-ratio)} = 4.073 - 0.1146 * \text{Age}$$

$$\text{or Odds-ratio} = \frac{\text{Prob(Cooled)}}{1 - \text{Prob(Cooled)}} = e^{(4.073 - 0.1146 * \text{Age})},$$

$$\text{Then Prob(Cooled)} = \frac{e^{(4.073 - 0.1146 * \text{Age})}}{1 + e^{(4.073 - 0.1146 * \text{Age})}}.$$

A plot (presented in Figure 1) showing the relationship between the probability of being cooled out and the age of students reveals a positive slope indicating that in this study as age increased the probability of students being cooled out increased. A descriptive breakdown of the frequency with which students of the various age classifications were cooled out and not cooled out is presented in Table 13.

Figure 1

Plot of Probability Cooled Out by Age

PROBABILITY COOLED OUT

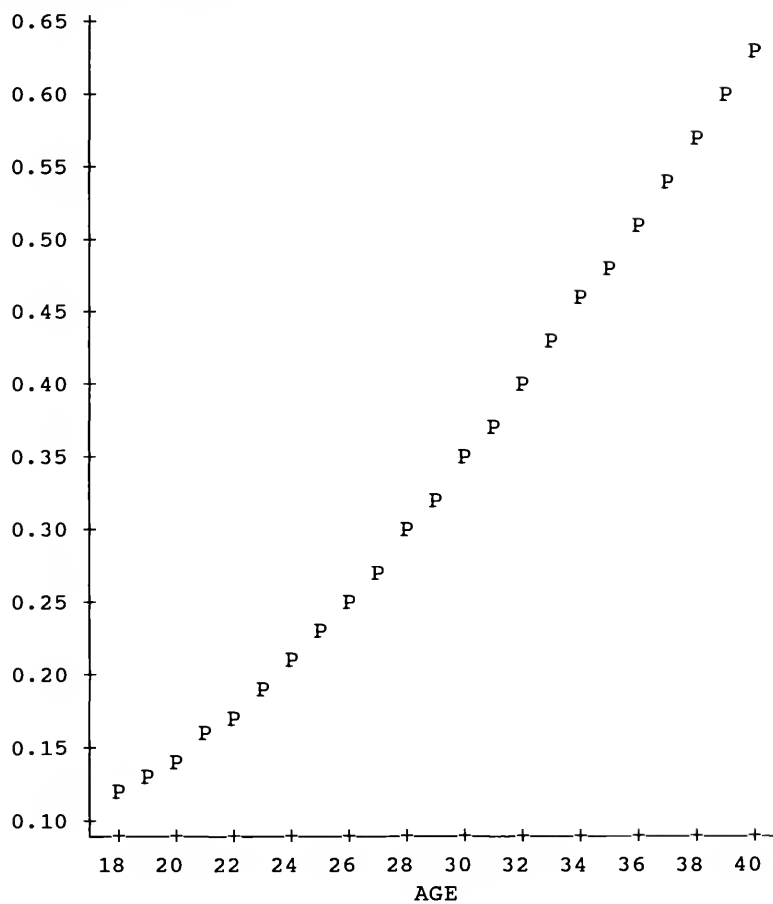


Table 13

Age of Students Cooled and Not Cooled by Frequency, Row Percentage, and Column Percentage

AGE	COOLED	NOT COOLED	TOTAL
Frequency			
Row Percentage			
Column Percentage			
18	0 0.00 0.00	1 100.00 0.64	1
19	2 25.00 4.76	6 75.00 3.82	8
20	9 19.57 21.43	37 80.43 23.57	46
21	3 7.50 7.14	37 92.50 23.57	40
22	5 17.86 11.90	23 82.14 14.65	28
23	5 38.46 11.90	8 61.54 5.10	13
24	1 12.50 2.38	7 87.50 4.46	8
25	1 6.67 2.38	14 93.33 8.92	15
26	2 50.00 4.76	2 50.00 1.27	4
27	2 40.00 4.76	3 60.00 1.91	5

Table 13--continued

AGE	COOLED	NOT COOLED	TOTAL
Frequency			
Row Percentage			
Column Percentage			
28	1 25.00 2.38	3 75.00 1.91	4
29	1 16.67 2.38	5 83.33 3.18	6
30	0 0.00 0.00	2 100.00 1.27	2
31	0 0.00 0.00	1 100.00 0.64	1
32	2 50.00 4.76	2 50.00 1.27	4
33	2 50.00 4.76	2 50.00 1.27	4
34	0 0.00 0.00	1 100.00 0.64	1
35	0 0.00 0.00	1 100.00 0.64	1
37	2 66.67 4.76	1 33.33 0.64	3
38	3 75.00 7.14	1 25.00 0.64	4
40	1 100.00 2.38	0 0.00 0.00	1
Total	42	157	199

The effectiveness of the models used in this study for analyzing the criterion variable, that is the goodness-of-fit of these models, was verified through analysis of the residual component of each model. If the p -value of the residual was significant in any of these models, then the fit of that model would be inadequate for explaining the data and a better fitting model would need to be created. With each of the models in this study, the residual had a p -value of either 1.0000 (Tables 8-11) or 0.1818 (Table 12), meaning each model was effective in fitting the data.

Thus, this study's null hypothesis was not rejected: in this study SES, race, and gender taken independently and in combination were not found to be significantly related to students being cooled out when two confounding variables (academic ability and age) were controlled. When age was examined as a predictor variable rather than a moderator variable, however, it was found to be significantly associated with whether or not a student was cooled out regardless of that student's SES, race, gender, or academic ability.

Additional Analysis of Age

The relationships between academic ability and age and SES and age were examined in light of age being significantly related to students being cooled out.

Analyses revealed that neither academic ability ($r = 0.03$; $p < 0.63$) nor SES ($r = 0.05$; $p < 0.51$) was significantly correlated to age.

Power Analysis

According to Agresti, "When we fail to reject a null hypothesis, we should be wary of concluding that no effect exists, unless there is high power for detecting effects of substantive size" (1990, p. 239). To check for the possibility that low statistical power is responsible for the failure to reject the null hypothesis, a series of power analyses were performed on the data. These analyses (presented in Tables 14-18) indicate the power that the statistical tests had to ensure that the findings as presented above were statistically representative. Study of these analyses indicates that in all instances, except for when age was isolated as a predictor of being cooled out (Table 18), the size of the effects was so small compared to the variability within the subjects themselves that showing significance would be difficult even with samples of 400 or 1000 subjects.

Table 14

Power Analysis^a of Main and Interaction Effects of Predictor
and Moderator Variables on Cooled Out

	Alpha					
	0.011			0.05		
	Total N			Total N		
	199	400	1000	199	400	1000
	Power	Power	Power	Power	Power	Power
Academic Ability	.016	.021	.039	.064	.078	.121
Age	.118	.268	.691	.274	.485	.860
SES	.019	.029	.062	.073	.097	.171
Race	.015	.020	.034	.062	.073	.109
Gender	.015	.020	.034	.062	.073	.109
SES*Race	.013	.016	.024	.057	.064	.085
SES*Gender	.011	.011	.011	.050	.050	.050
Race*Gender	.012	.013	.015	.052	.055	.062
SES*Race*Gender	.011	.011	.011	.050	.050	.050

^a2-tail z

Table 15

Power Analysis^a of Main and Interaction Effects of Predictor and Moderator Variables on Cooled Out when Excluding Zero and 7360

	Alpha					
	0.011			0.05		
	Total N			Total N		
	199	400	1000	199	400	1000
	Power	Power	Power	Power	Power	Power
Academic Ability	.011	.011	.011	.050	.050	.050
Age	.015	.019	.031	.060	.071	.103
SES	.011	.011	.011	.050	.050	.050
Race	.019	.029	.062	.073	.097	.171
Gender	.013	.014	.020	.055	.059	.073
SES*Race	.016	.021	.039	.064	.078	.121
SES*Gender	.011	.012	.013	.051	.052	.056
Race*Gender	.021	.032	.071	.077	.104	.189
SES*Race*Gender	.028	.049	.127	.096	.144	.288

^a2-tail z

Table 16

Power Analysis^a of Main Effects of Predictor and Moderator Variables on Cooled Out

	Alpha					
	0.02			0.05		
	Total N			Total N		
	199	400	1000	199	400	1000
	Power	Power	Power	Power	Power	Power
Academic Ability	.026	.032	.050	.060	.071	.103
Age	.118	.374	.801	.293	.518	.887
SES	.031	.043	.081	.070	.090	.152
Race	.024	.029	.043	.058	.066	.091
Gender	.036	.054	.114	.079	.109	.202

^a2-tail z

Table 17

Power Analysis* of Main Effects of Predictor and Moderator Variables on Cooled Out when Excluding Zero and 7360

	Alpha					
	0.02			0.05		
	Total N			Total N		
	199	400	1000	199	400	1000
	Power	Power	Power	Power	Power	Power
Academic Ability	.020	.020	.020	.050	.050	.050
Age	.024	.029	.043	.058	.066	.091
SES	.028	.037	.065	.065	.080	.128
Race	.032	.044	.085	.071	.092	.158
Gender	.024	.028	.040	.057	.064	.085

*2-tail z

Table 18

Power Analysis^a of Age on Cooled Out

	Alpha					
	0.0167			0.05		
	Total N			Total N		
	199	400	1000	199	400	1000
	Power	Power	Power	Power	Power	Power
Age	.819	.989	.999	.911	.997	.999

^a2-tail zSummary of Findings

In this study SES, race, and gender taken independently and in combination were not found to be significantly related to students being cooled out when academic ability and age were controlled. When age was examined as a predictor variable rather than a moderator variable, it was found to be significantly associated with students being cooled out regardless of their SES, race, gender, or academic ability. Specifically, as the age of students in

this study increased, so too did the probability of their being cooled out.

CHAPTER 5

DISCUSSION

This study measured the cooling-out process (Clark, 1960a, 1960b, 1980) against a meritocratic definition of fairness to determine if this process denied access to the transfer degree to students from particular segments of society. Included in this final chapter are the study's principal findings, the study's placement within scholarship, the relevance of the study's principal findings to meritocratic theory and critical theory, and the study's conclusions.

Principal Findings

In this study, the SES, race, and gender of students were unrelated to whether or not students were cooled out. Thus, this study's null hypothesis (see page 34) is not rejected. The cooling-out process as measured in this study appears to live up to a meritocratic definition of fairness by not denying access to the transfer degree to students of differing socio-economic backgrounds, students of either black or white race, and students of either gender.

Age was found to be significantly related to students being cooled out although incorporated into this study's

design as a moderator variable. Analysis of this study's results suggests that the older the student, the more likely he or she was cooled out.

Study's Placement within Scholarship

Burton Clark (1960a, 1960b, 1980) saw cooling out limited to community college students with academic deficiencies who earned terminal degrees after having aspired to earn transfer degrees. The handful of quantitative studies and the one qualitative study purporting to examine the relative fairness of the cooling-out process against meritocratic principles all deviated from Clark's narrow definition of this process. This deviation from Clark calls into question the relevance of their findings to a meritocratic analysis of the cooling-out process. Baird (1971) found the SES of women cooled out was higher than for women who were not cooled out, but he included in his sample of cooled-out students those "who originally planned a professional degree but later planned only a BA" (p. 163). Olandt (1987) concluded that SES and gender were associated with students being cooled out, but he included within his definition of cooling out the moving of students "from an associate of science (A.S.) degree major to a certificate program" (p. 55). Kaliszeski (1986) found cooling out occurred "significantly more often with minority students than with white students" (p. 107), but

community college dropouts comprised 50 percent of his sample. Finally, Moore (1975) found in her qualitative analysis of the cooling-out process that women tended to experience pressures from the community college and other sources to change from the transfer to a terminal program, but her understanding of being cooled out focused on "the rechanneling of nontraditional career aspirations into traditional choices" (p. 580).

Scholars may view the thwarted intentions of students to earn either professional degrees or associate of science degrees, the inclusion of drop outs into the ranks of those cooled out, and a gender-specific interpretation of what constitutes lowered academic aspirations as valuable extensions of Clark's work, but they are extensions nonetheless. They go well beyond the original definition Clark applied to the cooling-out process. The results of these studies, therefore, have only tangential bearing on whether the cooling-out process lives up to specified meritocratic principles.

This study, on the other hand, did not deviate from Clark's understanding of the cooling-out process. Instead, it focused on whether the cooling-out process as defined by Clark lived up to specified meritocratic principles upon which it was derived. It isolated those students who had experienced the cooling-out process and controlled for their academic ability and age; it dichotomized students into

those who had been cooled out and those who had not been cooled out; and it tested for three variables (SES, race, and gender) that critical theorists claim would be significant predictors of student academic progress. The purpose of this study was to determine if these variables were significant predictors of students being cooled out. These variables were not found to be significant so this study's findings support the meritocratic claim that the cooling-out process did not deny access to the transfer degree to these cooled-out students as measured against a meritocratic definition of fairness.

Relevance of Principal Findings to Meritocratic Theory

The absence in this study of any significant relationships between the predictor variables SES, race, and gender and the criterion variable cooled out does not speak to the appropriateness of students having been placed into the cooling-out process since this study focused its investigation on the fairness of the cooling-out process after students had been placed into one or more college preparatory courses. Nor does it address whether the community college personnel encountered by students during the cooling-out process based their recommendations regarding what degrees students should pursue and all evaluations of student performance upon valid and reliable measures of student academic ability. Nonetheless, this

absence of any significant relationships between the predictor variables SES, race, and gender and the criterion variable cooled out is what educators favoring a meritocratic appraisal of the community college would expect.

Most meritocrats claim community colleges were founded on "such concepts as equal opportunity for all and the desire to eliminate . . . social barriers to higher education" (Brick, 1964, p. 26). They assert that every student at the community college is worthy of pursuing a postsecondary degree regardless of his or her "current status within the culture" (Harlacher, 1969, p. 4). Within such a view of the community college, furthermore, distinctions the institution may make between students are "most invidious when they are irrelevant" (Brubacher, 1982, p. 69) to the abilities of the students to succeed academically. Distinctions based upon the SES, race, or gender of students would then be invidious since these three demographic variables are viewed by meritocratic educators as insignificantly related to the capability of students to succeed academically. Thus, this study's finding that SES, race, and gender taken independently and in combination were not significantly related to students being cooled out affirms the meritocratic belief that at the identified community college invidious distinctions were not detected regarding students within the cooling-out process; it

affirms from the meritocratic point of view that these students from different segments of society had equal opportunity to earn the transfer degree.

Of possible concern to those educators favoring a meritocratic appraisal of the community college, however, is the finding in this study that age was significantly related to students being cooled out. On the surface, this finding seems to contradict the meritocratic supposition that variables unrelated to academic ability also are unrelated to students being cooled out. Upon further investigation, this finding also seems to undermine the importance of ambition and achievement within meritocratic thought.

A significant relationship between age and being cooled out possibly could be explained within meritocratic theory if the definition of merit is extended beyond academic ability to embrace ambition and achievement, as suggested by Rehberg and Rosenthal (1978) in their analysis of meritocratic and critical theory arguments of student progress within the high school. This extension of the definition of merit becomes critical in explaining a significant relationship between age and being cooled out when considered in the light of studies determining that among community college students age is positively associated with academic expectations (Healy, Mitchell, & Mourton, 1987; Ommen, Brainard, & Canfield, 1979), motivation (Lenning & Hanson, 1977), and achievement

(Johnson & Walberg, 1989). Thus, a significant relationship between age and being cooled out in this study could be seen as an affirmation of the importance of ambition and achievement within meritocratic thought, an importance that this study failed to consider by including age as a moderator variable instead of as a fourth predictor variable. Within the context of the cooling-out process endorsed by meritocratic theory, a significant relationship between age and being cooled out then suggests older students are cooled out less often than younger students: Older students are better able than younger students to see beyond their initial academic deficiencies to their goal of earning the transfer degree, are more motivated than younger students to work toward this goal, and are more likely than younger students to achieve it. Nevertheless, the direction of the relationship between age and being cooled out found in this study runs contrary to this reasoning. Analysis of this study's results determined that older students were more likely to be cooled out than younger students. Thus, analysis of this study's results determined age to be significantly related to students being cooled out even though such significance runs counter to meritocratic thought.

The finding in this study that academic ability was not significantly related to students being cooled out also would be of possible concern to those educators favoring a

meritocratic appraisal of the community college. This finding seems to contradict the meritocratic supposition that the lower a student's academic ability the greater the likelihood he or she will be cooled out. While two probable meritocratic lines of reasoning fail to explain this finding, a third arguably succeeds.

First, if a significant and negative relationship were present in this study between academic ability and age (that is, the greater a student's academic ability, the younger that student is in age), the following reasoning could be used to explain the relationship between academic ability and being cooled out: Academic ability was not significantly related to students being cooled out because those students with the lesser academic ability possessed the greater motivation and achievement that, in turn, offset their lesser academic ability. The absence of such a significant and negative relationship between academic ability and age, however, renders this reasoning moot.

Second, if within the literature no significant relationship were shown to exist between the academic ability of students and their decision either to enter the work force or to pursue a college degree, then the following reasoning could be used to explain the relationship between academic ability and being cooled out in this study: Academic ability was not significantly related to students being cooled out because to be cooled out is ostensibly a

decision by students to earn the terminal degree and enter the work force while not to be cooled out is ostensibly a decision by students to earn the transfer degree and continue their college careers. Within the literature, however, Rehberg and Rosenthal (1978) conclude not only that the lesser a student's academic ability, the greater likelihood he or she will enter the labor force, but also that "the total effect that ability had on the educational goals of students" (p. 253) increases as students get older. Therefore, there is no absence of literature determining a significant relationship between the academic ability of students and their decision either to enter the work force or to pursue a college degree, and such an absence cannot be used to explain the failure of academic ability in this study to be significantly and negatively related to students being cooled out.

A third possible explanation for this study's finding that academic ability was not significantly related to students being cooled out is the effectiveness of the college preparatory program within the community college to improve upon student academic ability sufficiently to make the assessed level of this ability at the time of entering the college moot to whether students were cooled out. According to Cohen and Brawer (1987), college preparatory program operators "report a variety of successes for their students, compared with similar students who did not receive

special treatment" (p. 234). These successes include improved grade-point averages and test scores. In his own study of the effectiveness of college preparatory English classes at fourteen community colleges, Cohen (1973) concluded that those students successfully completing the college preparatory English class possessed writing abilities equal to students placing directly into college-level Freshman English. Hoben (1983) and McCadden (1983), furthermore, separately concluded that students successfully completing college preparatory courses at their community colleges tended to perform better academically than students not required to take such college preparatory courses. Since some students in this study were required to take only one college preparatory course while others were required to take two or all three of these courses, the recorded differences in academic ability at the beginning of their college careers would not necessarily remain constant and would not reflect any changes in their academic ability brought about by the taking of these college preparatory courses. Thus, a significant relationship between academic ability and being cooled out would not be detectable in this study since academic ability was operationalized according to scores from standardized tests taken by students upon entering the community college and not scores reflecting possible changes in this ability due to college preparatory courses.

Meritocratic educators, therefore, would applaud this study's finding that SES, race, and gender appear to be unrelated to students being cooled out. At the same time, they would scramble to explain the finding that older students were more likely candidates to be cooled out than were younger students.

Relevance of Principal Findings to Critical Theory

Critical theorists would expect that SES, race, and gender would have emerged in this study as significant predictors of students being cooled out even after these students were placed into one or more college preparatory courses, and such was not the case. Critical theorists, however, would dismiss the importance of these results for several reasons. First, because drop outs who had been in the cooling-out process were excluded from this study, these results fail to reflect the importance of SES, race, and gender for those very students whose SES, race, and gender were most directly linked to their academic fates during the cooling-out process. As Burton Clark defined the cooling-out process, students dropping out of the community college cannot be cooled out--the cooling-out process ends when students placed within this process earn either a terminal or transfer degree. In an effort to remain true to Clark's understanding of the cooling-out process, this study accordingly selected its subjects from a pool of students

who had been in the cooling-out process and graduated with either a transfer or a terminal degree; this study excluded students who had been in the cooling-out process but dropped out of school and never graduated.

Critical theorists contend that students not of social privilege (that is, students of lower SES, blacks, and females) are more likely to drop out of community colleges once placed within the cooling-out process than are students of social privilege. This contention is supported in part by Kaliszeski (1986) who not only found that "students who have been filtered through the cooling-out process are more likely to be classified as dropouts than graduates" (p. 100), but also found that lower SES students and black students who were in the cooling-out process were more inclined to become drop outs than were higher SES students and white students also in this process. Bourdieu and Passeron (1977) would argue that such students drop out during the cooling-out process because they do not exhibit the linguistic and social norms most valued by community college personnel, norms that influence all evaluations of academic ability since students are expected to think, speak, write, and act like middle-class white males. Steele (1992) would further argue that such students, especially black students but also female students and lower SES white students, drop out during the cooling-out process because they are faced with a double jeopardy: they "risk

devaluation for a particular incompetence, such as a failed test or a flubbed pronunciation. . . . [and] further risk that such performances will confirm the broader, racial [and social] inferiority they are suspected of" (pp. 72-73). Hardships like racial and social devaluation, according to McClelland (1990), are more likely to result in the lowered aspirations of these students than it is students of social privilege since the former are less likely than are their more privileged peers "to be surrounded by images of success, to be able to see the connection between effort and reward, and to believe that they are capable of achieving ambitious goals" (p. 104).

Those students included within this study were those who found academic success to the extent that they graduated with either a transfer or terminal degree. They were students who sufficiently exhibited the linguistic and social norms most valued by the community college's personnel, who adequately overcame racial and social devaluation, and who ultimately were rewarded for their academic efforts. To critical theorists, they were aberrations. Any attempt to determine the importance of SES, race, and gender on students being cooled out using only these students, thereby, fails to discern the true importance of SES, race, and gender during the cooling-out process and produces invalid results that serve to prop up the meritocratic facade of the community college.

Second, these results fail to address the relationship between social privilege and placement into the cooling-out process. Critical theorists would contend that students not of social privilege were more likely to have been placed into the cooling-out process at this identified community college than were students of social privilege. They base this contention on the premise that the standardized tests used for academic placement are defined in terms on which students of social privilege tend to excel (Archbald & Newman, 1988; Bowles, 1971; Carnoy, 1974; Karabel, 1972; Medina & Neill, 1988; Wilkerson, 1982). This contention arguably is supported by the significant relationship in this study between the SES and race of students and their assessed academic ability: According to results of standardized tests, students of lower SES possessed significantly less academic ability than students of higher SES and black students possessed significantly less academic ability than white students.

Third, these results fail to address the relationship between SES, race, and gender and academic achievement as operationalized by grade point average. Since students earning transfer degrees could effectively have their career aspirations terminated due to low grade point averages that prevent their articulation into disciplines of preference, the SES, race, and gender of students could be significantly

related to their career aspirations being altered even though they were not cooled out.

Critical theorists, therefore, would scoff at meritocratic applause for this study's findings that SES, race, and gender were not significantly related to students being cooled out. They would denounce the importance of these findings since drop outs were excluded, placement into the cooling-out process was not questioned, and academic achievement was defined only as degree earned.

Conclusions

The cooling-out process is at the heart of the debate of whether community colleges are fair in providing academic access to all students intending to earn a transfer degree. On one side of this debate are educators like Burton Clark who claim community colleges cool out low-academic-ability students regardless of their social standing to improve their chances of finding academic success in a terminal degree program. On the other side of the debate are educators like Jerome Karabel who claim community colleges disproportionately cool out underprivileged students regardless of their academic standing to perpetuate existing social inequities. The scholarship on cooling out fails to settle this debate. This study was committed to examining the cooling-out process in such a way as to shed light on this debate.

This study's findings are noteworthy in their contribution to community college scholarship since no other study has analyzed the relative fairness of the cooling-out process without extending or redefining Clark's vision of this process during the course of its analysis. Its findings are limited in their application to community colleges, however, since Clark's vision of the cooling-out process has questionable relevance to the academic careers of today's students who aspire to earn transfer degrees but possess deficient academic skills upon entering the community college.

Analysis of this study's results supports the meritocratic supposition that at the identified community college the SES, race, and gender of students were not significantly related to these students being cooled out. These results mark the only occasion in which these three variables were examined independently and in combination to determine the relative fairness of Clark's definition of the cooling-out process. They also mark the only occasion in which the moderator variables age and academic ability were included in the analyses. When determining the relevance of these results, educators must keep in mind that drop outs were excluded from this study and that drop outs may be the very students most likely to have their academic fates affected by SES, race, and gender.

The inclusion of age as a moderator variable in this study's analyses had an unintended effect. Analysis of the results involving this variable determined that at the identified community college the older students in the cooling-out process appeared more likely to be cooled out than the younger students in this process. This determination denotes the first time in the community college literature that age has been associated with students being cooled out, and it calls into question whether older students in the cooling-out process are being unfairly denied access to the transfer degree. Further research needs to focus on older community college students to determine exactly why they tend to cast off their goals of earning transfer degrees.

The inclusion of academic ability as a moderator variable in this study's analyses also had an unintended effect. Analysis of the results involving this variable determined that at the identified community college academic ability was not significantly related to students being cooled out. This determination serves as a catalyst for this study's conclusion that Clark's vision of the cooling-out process has less relevance in today's community college than was perceived by Clark when he first observed this process at San Jose Junior College in the late 1950s.

Students entering the community college with deficient academic skills during the era in which Clark first observed

the cooling-out process could not expect to turn to established college preparatory programs for assistance in shoring up their deficient academic skills. Such programs did not assume "an identifiable form" (Donovan, 1985, p. 104) until the early 1970s and have evolved since then to become critical components of the community college curriculum. The success of these programs in improving the academic skills of its students is widely touted by community college personnel and scholars. Their success arguably may account for the absence of a significant relationship in this study between academic ability and being cooled out. Clark's contention that the cooling-out process is designed to convince students whose academic aspirations exceed their academic abilities to change from the transfer degree program to a terminal degree program, therefore, disavows the fact that many students in this process are able to bolster their academic abilities through enrollment in college preparatory programs and eventually earn transfer degrees. Of the 199 students in this study who were placed into the cooling-out process, only 42 students--21.1% of the total--were cooled out. Furthermore, no quantitative analysis of the cooling-out process in other studies, no matter how the cooling-out process was operationalized, found more than approximately three in every ten students in the cooling-out process to have been cooled out.

Clearly, the cooling-out process no longer functions as Clark defined it. Educators must develop a new template of the process by which community colleges serve the needs of academically deficient students seeking transfer degrees. They must draw upon existing scholarship on the cooling-out process and extend this scholarship through quantitative and qualitative research. Such research needs to look closely at the role of college preparatory programs and the academic careers of drop outs. Once this new template has been developed, it will become a new point of contention for scholars embracing meritocracy and those championing critical theory.

REFERENCES

- Agresti, A. (1990). Categorical data analysis. New York: John Wiley & Sons.
- Alba, R. D., & Lavin, D. E. (1981). Community colleges and tracking in higher education. Sociology of Education, 54, 223-237.
- Anderson, K. (1984). Institutional differences in college effects. Boca Raton: Florida Atlantic University. (ERIC Document Reproduction Service No. ED 256 204)
- Apple, M. W. (1990). Ideology and curriculum (2nd ed.). New York: Routledge.
- Archbald, D. A., & Newman, F. M. (1988). Beyond standardized testing: Assessing authentic academic achievement in the secondary school. Reston, VA: National Association of Secondary School Principals.
- Aronowitz, S., & Giroux, H. A. (1985). Education under siege: The conservative, liberal and radical debate over schooling. South Hadley, MA: Bergin & Garvey.
- Astin, A. W. (1978). Four critical years. San Francisco: Jossey-Bass.
- Baird, L. (1971). Cooling out and warming up in the junior college. Measurement and Evaluation in Guidance, 4, 160-171.
- Bogue, J. P. (1950). The community college. New York: McGraw-Hill.
- Boren, S. (1989, June 26). The pell grant program: Background and issues (Report No. CRS-89-411-EPW). Washington, DC: Congressional Research Service. (ERIC Document Reproduction Service No. ED310646)
- Bourdieu, P. (1973). Cultural reproduction and social reproduction. In R. Brown (Ed.), Knowledge, education and cultural change: Papers in the sociology of education (pp. 71-112). London: Tavistock.

- Bourdieu, P., & Passeron, J. (1977). Reproduction in education, society and culture. Sage: London.
- Bowles, S. (1971). Unequal education and the reproduction of the social division of labor. The Review of Radical Political Economics, 3(4), 1-30.
- Bowles, S., & Gintis, H. (1976). Schooling in capitalist America: Educational reform and the contradictions of economic life. New York: Basic Books.
- Brick, M. (1964). Forum and focus for the junior college movement: The American association of junior colleges. New York: Bureau of Publications Teachers College, Columbia University.
- Brint, S., & Karabel, J. (1989a). American education, meritocratic ideology, and the legitimation of inequality: The community college and the problem of American exceptionalism. Higher Education, 18, 725-735.
- Brint, S., & Karabel, J. (1989b). The diverted dream. New York: Oxford University Press.
- Brubacher, J. S. (1982). On the philosophy of higher education. San Francisco: Jossey-Bass.
- The Carnegie Commission on Higher Education. (1970). The open-door colleges: Policies for community colleges. New York: McGraw-Hill.
- ✓ Carnoy, M. (1974). Education as cultural imperialism. New York: McKay.
- Catalog 1988-89. (1988). Gainesville, FL: Santa Fe Community College.
- Catalog 1992-1994. (1992). Gainesville, FL: Santa Fe Community College.
- Clark, B. R. (1960a). The "cooling-out" function in higher education. The American Journal of Sociology, 65, 569-576.
- Clark, B. R. (1960b). The open door college: A case study. New York: McGraw-Hill.
- Clark, B. R. (1980). The "cooling out" function revisited. In G. B. Vaughan (Ed.), Questioning the community college role (pp. 15-31). San Francisco: Jossey-Bass.

- Clark, B. R. (1982). Educating the expert society. San Francisco: Chandler.
- Clowes, D. A., & Levin, B. H. (1980). How do two year colleges serve recent high school graduates? Community College Review, 7(3), 24-35.
- Cohen, A. M. (1973). Assessing college students' ability to write compositions. Research in the Teaching of English, 7, 356-371.
- Cohen, A. M., & Brawer, F. B. (1987). The American community college. San Francisco: Jossey-Bass.
- Cohen, A. M., Brawer, F. B., & Lombardi, J. (1971). A constant variable. San Francisco: Jossey-Bass.
- Cohen, L., & Manion L. (1989). Research methods in education (3rd ed.). London: Routledge.
- Cohen, M. D., & March, J. G. (1974). Leadership and ambiguity: The American college president. New York: McGraw-Hill.
- Delaino, T., & Grunder, P. (1990). Factbook: Santa Fe Community College 1989-90. Gainesville, FL: Santa Fe Community College.
- Donovan, R. A. (1985). Creating effective programs for developmental education. In W. L. Deegan, D. Tillery, & Associates (Eds.), Renewing the American community college (pp. 103-128). San Francisco: Jossey-Bass.
- Dougherty, K. (1987). The effects of community colleges: Aid or hindrance to socioeconomic attainment? Sociology of Education, 60, 86-103.
- Feinberg, W. (1975). Reason and rhetoric: The intellectual foundations of 20th century liberal educational policy. New York: John Wiley & Sons.
- Fitch, R. J. (1969). An investigation of the "cooling out" process in the junior college as indicated by changes of major. Los Angeles: U.C.L.A. Graduate School of Education. (ERIC Document Reproduction Service No. ED 039 868)
- Florida Department of Education. (1991). The fact book: Report for Florida community colleges. Tallahassee, FL: Author.

- Freire, P. (1988). Pedagogy of the oppressed. (M. B. Ramos, Trans.). New York: Continuum. (Original work published 1970).
- Giarelli, J. M., & Webb, R. B. (1980). Higher education, meritocracy and distributive justice. Educational Studies: A Journal in the Foundations of Education, 11, 221-238.
- Giroux, H. A. (1983). Theories of reproduction and resistance in the new sociology of education: A critical analysis. Harvard Educational Review, 53, 257-293.
- Giroux, H. A. (1988). Critical theory and the politics of culture and voice: Rethinking the discourse of educational research. In R. R. Sherman & R. B. Webb (Eds.), Qualitative research in education: Focus and methods (pp. 190-210). London: Falmer Press.
- Gleazer, E. J., Jr. (1980). The community college: Values, vision, and vitality. Washington, D.C.: American Association of Community and Junior Colleges.
- Goodwin, G. L. (1976). The nature and the nurture of the community college movement. Community College Frontiers, 4(3), 5-13.
- Grant, C. A., & Sleeter, C. S. (1986). Race, class, and gender in education research: An argument for integrative analysis. Review of Educational Research, 56, 195-211.
- Harlacher, E. L. (1969). The community dimension of the community college. Englewood Cliffs, NJ: Prentice-Hall.
- Healy, C. C., Mitchell, J. M., & Mourton, D. L. (1987) Age and grade differences in career development among community college students. The Review of Higher Education, 10, 247-258.
- Hearn, J. C. (1984). The relative roles of academic, ascribed, and socioeconomic characteristics in college destinations. Sociology of Education, 57, 22-30.
- Herrnstein, R. J. (1971). I. Q. in the meritocracy. Boston: Little, Brown & Co.
- Hoben, M. (1983). Developmental studies: A model program. Journal of Developmental and Remedial Education, 6(3), 6-9, 32.

- Hosmer, D. W., & Lemeshow, S. (1989). Applied logistic regression. New York: John Wiley & Sons.
- Houston, W., & Sawyer, R. (1991). Relating scores on the enhanced ACT assessment and the SAT test batteries. College and University, 66, 195-200.
- Institutional self study report 1990-1992. (1991). Gainesville, FL: Santa Fe Community College.
- Johnson, M. L., & Walberg, H. J. (1989). Factors influencing grade point averages at a community college. Community college review, 16(4), 51-60.
- Judd, R. B. (1990). The value of an associate in arts degree to the community college graduate who does not transfer to the university. Gainesville: Institute of Higher Education of the University of Florida.
- Kaliszeski, M. S. (1986). Clark's "cooling out" concept as a factor in student completion of community college programs (Doctoral dissertation, University of Florida, 1986). Dissertation Abstracts International, 47, 3954.
- Karabel, J. (1972). Community colleges and social stratification. Harvard Educational Review, 42, 521-562.
- Lenning, O. T., & Hanson, G. R. (1977). Adult students at two-year colleges: A longitudinal study. Community/Junior College Research Quarterly, 1, 271-287.
- Levin, B., & Clowes, D. (1980). Realization of educational aspirations among blacks and whites in two and four-year colleges. Community/Junior College Research Quarterly, 4, 185-193.
- London, H. B. (1978). The culture of a community college. New York: Praeger Publishers.
- Marco, G. L., & Abdel-Fattah, A. A. (1991). Developing concordance tables for scores on the enhanced ACT assessment and the SAT. College and University, 66, 187-194.
- McCabe, R. H. (1981). Now is the time to reform the American community college. Community and Junior College Journal, 51(8), 6-10.
- McCadden, J. F. (1983). Team-teaching: Quality circles for teachers. Innovation Abstracts, 5, 1.

- McClelland, K. (1990). Cumulative disadvantage among the highly ambitious. Sociology of Education, 63, 102-121.
- McConnell, T. R. (1960). Forward to B. R. Clark, The open door college: A case study (pp. vii-xi). New York: McGraw-Hill.
- Medina, N., & Neill, D. M. (1988). Fallout from the testing explosion: How 100 million standardized exams undermine equity and excellence in America's public schools. Cambridge, MA: National Center for Fair and Open Testing.
- Miller, M. J. (1991, March). Concordance tables for college placement. (Available from Florida Department of Education, 1702 Capital Building, Tallahassee, Florida 32301)
- Moore, K. M. (1975). The cooling out of two-year college women. Personnel and Guidance Journal, 53, 578-583.
- Olandt, E. D. (1987). The cooling out function in higher education: A study of social stratification in a New Jersey county community college (Doctoral dissertation, Rutgers The State University of New Jersey, 1987). Dissertation Abstracts International, 48, 815.
- Olneck, M. R., & Crouse, J. (1979). The IQ meritocracy reconsidered: Cognitive skill and adult success in the United States. American Journal of Education, 88(1), 1-31.
- Ommen, J. L., Brainard, S. R., & Canfield, A. A. (1979). Learning preferences of younger and older students. Community College Frontiers, 7(3), 29-33.
- Rehberg, R. A., & Rosenthal, E. R. (1978). Class and merit in the American high school: An assessment of the revisionist and meritocratic arguments. Longman: New York.
- Rudolph, F. (1987). Curriculum: A history of the American undergraduate course of study since 1636. San Francisco: Jossey-Bass.
- Sawyer, J. A., & Nickens, J. M. (1980). The fulfillment of the democratization role of the community college. College and University, 55, 113-124.
- Simon, L. S. (1967). The cooling-out function of the junior college. The Personnel and Guidance Journal, 45, 973-978.

- Smittle, P., Delaino, T., & Mott, D. (1989). ACT/CPT concordance study. (Santa Fe Community College, Gainesville, Florida 32607)
- Steele, C. M. (1992). Race and the schooling of black Americans. The Atlantic Monthly, 269(4), 68-78.
- Templin, R. G., Jr., & Shearon, R. W. (1980). Curriculum tracking and social inequality in the community college. In G. B. Vaughan (Ed.), New directions for community colleges: No. 32. Questioning the community college role (pp. 83-91). San Francisco: Jossey-Bass.
- Vaughan, G. B. (1989). The community college presidency. New York: American Council on Education, Macmillan.
- Velez, W. (1985). Finishing college: The effects of college type. Sociology of Education, 58, 191-200.
- Wilkerson, M. B. (1982). The masks of meritocracy and egalitarianism. Educational Record, 63(1), 4-11.
- Zwerling, L. S. (1976). Second best: The crisis of the community college. New York: McGraw-Hill.

BIOGRAPHICAL SKETCH

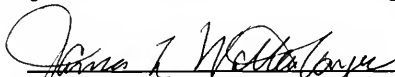
Born March 23, 1959, David M. Hellmich is Richard and Phyllis Hellmich's fourth child. He and his nine siblings were reared in Greensburg, a small farming community in southeastern Indiana. He attended St. Mary's Elementary School, Greensburg Junior High School, and Greensburg Community High School. He attended DePauw University in Greencastle, Indiana, from 1977 through 1981 where he was a varsity letter winner in cross country and track, a residence hall assistant, and a Phi Beta Kappa. He earned a master's degree in American literature from Indiana University in 1984 and began his doctoral studies at the University of Florida in 1987.

Mr. Hellmich has been an educator for nearly ten years: one year as a graduate assistant in the English Department at Indiana University; two years as an English teacher at Shattuck-St. Mary's School, a private boarding school in Faribault, Minnesota; one and one-half years as an English teacher at Trenton High School, a public school in rural Florida; and five years as an English professor at Santa Fe Community College in Gainesville, Florida. He will assume

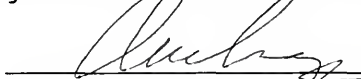
the position of Coordinator of Institutional Research at Santa Fe Community College beginning December 18, 1992.

Mr. Hellmich married Linda Kay Berger on July 23, 1983. Their first daughter, Lara Katherine, was born on July 24, 1984, and their second daughter, Caitlin Elise, was born on April 17, 1988. They are expecting a third child in early February, 1993. Linda Berger Hellmich is currently completing her doctoral studies in counseling psychology at the University of Florida where she specializes in sexual assault-related therapy.

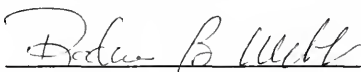
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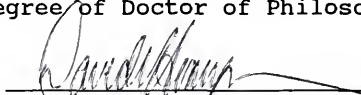
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Professor of Educational Leadership

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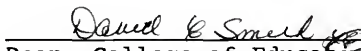

Rod Webb
Professor of Foundations of
Education

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David Honeyman
Associate Professor of Educational
Leadership

This dissertation was submitted to the Graduate Faculty of the College of Education and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

December 1992


Dean, College of Education

Dean, Graduate School

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